

AXMINSTER

Model Engineer
SERIES



Code **505098**

SX1 Super Micro-Mill MKII



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CE Declaration of Conformity

The undersigned, Ole Stilling authorised by Shanghai SIEG Machinery Co., Ltd.
No.555 Caofeng Rd., South to No. 17 Bridge of Caoan Rd., Shanghai declares that this product:

(Micro Mill) SX1

manufactured by Shanghai SIEG Machinery Co. is in compliance with the following
standards or standardisation documents

EN55014-1:2000, EN55014-2:1997
EN61000-3-2:2000, EN61000-3-3:1995

in accordance with Council Directives
(89/336/EEC amended by 93/68/EEC)



Warning The symbols below advise that you follow the correct safety procedures when using this machine.



Fully read manual
and safety instructions
before use



Ear protection
should be worn



Eye protection
should be worn



HAZARD
Motor gets hot

What's in the Included

Quantity	Item	Model Number
1 No.	Micro Mill with Chuck and Draw Bar fitted	SX1
Box containing:-		
1 No.	Chuck Key	
3 No.	Rod Handles (detached for packing)	
1 No.	Double Open Ended Spanner 5mm A/F x 5.7mm A/F	
1 No.	Double Open Ended Spanner 8mm A/F x 10mm A/F	
1 No.	Nipple 'C' Spanner 28mm-32mm	
1 No.	Allen Key 3mm	
1 No.	Allen Key 6mm	
4 No.	'T' Slot Keepers	
1 No.	Tommy Bar	
1 No.	Oiling Bottle	
1 No.	Spare Fuse (250v x 1 Amp)	
1 No.	User Manual	



Please read the Instruction Manual prior to using your new machine; as well as the installation procedure, there are daily and periodic maintenance recommendations to help you keep your machine on top line and prolong its life. Keep this Instruction Manual readily accessible for any others who may also be required to use the machine.

Having unpacked you machine and its accessories, please check the contents against the equipment list "What's included", if there are any discrepancies, please contact Axminster Tool Centre using the procedures laid down in the catalogue.

Please dispose of the packaging responsibly, much of the material is bio-degradable. The machine and its accessories will arrive coated with heavy corrosion preventative grease. This will need to be cleaned from the machine, its components and accessories prior to it being set up and commissioned. Use coal oil, paraffin or a proprietary degreaser to remove the barrier grease. Be warned, it will stain if you splash it on clothing etc., wear overalls, coverall et al., rubber gloves are also a good idea, as is eye protection if your cleaning process tends to be a little bit enthusiastic. After cleaning, lightly coat the exposed metal surfaces of the machine with a thin layer of light machine oil. N.B If you used paraffin/kerosene make sure you apply this thin film sooner rather than later.

General Instructions for 230V Machines

Good Working Practices/Safety

The following suggestions will enable you to observe good working practices, keep yourself safe and maintain your tools and equipment in good working order.



WARNING!! KEEP TOOLS AND EQUIPMENT OUT OF THE REACH OF YOUNG CHILDREN

Mains Powered Tools

Primary Precautions

These machines are supplied with a moulded 13 Amp. plug and 3 core power cable. Before using the machine inspect the cable and the plug to make sure that neither are damaged. If any damage is visible have the damaged item inspected/repaired by a suitably qualified person. If it is necessary to replace the plug, it is preferable to use an 'unbreakable' type that will resist damage on site. Only use a 13 Amp plug, and make sure the cable clamp is tightened securely. Fuse as required. If extension leads are to be used, carry out the same safety checks on them, and ensure that they are correctly rated to safely supply the current that is required for your machine.

Work Place/Environment

The machine is not designed for sub-aqua operation, do not use when or where it is liable to get wet. If the machine is to be used outside and it starts to rain (unusual though this would be in U.K.), stop work and move it inside. If machine has got wet; dry it off as soon as possible, with a cloth or paper towel. Do not use 230V a.c. powered machines anywhere within a site area that is flooded or puddled, and do not trail extension cables across wet areas. Keep the machine clean; it will enable you to more easily see any damage that may have occurred. Clean the machine with a damp soapy cloth if needs be, do not use any solvents or cleaners, as these may cause damage to any plastic parts or to the electrical components. Keep the work area as uncluttered as is practical, this includes personnel as well as material.



(Under no circumstances should CHILDREN be allowed in work areas)

It is good practice to leave the machine unplugged until work is about to commence, also make sure to unplug the machine when it is not in use, or unattended. Always disconnect by pulling on the plug body and not the cable. Once you are ready to commence work, remove any tools used in the setting operations (if any) and place safely out of the way. Re- connect the machine.

Carry out a final check e.g. check the cutting tool, drill bit, saw blade etc., is securely tightened in the machine, check you have the correct speed and function set, check that the power cable will not 'snag' etc. Make sure you are comfortable before you start work, balanced, not reaching etc.

If the work you are carrying out is liable to generate flying grit, dust or chips, wear the appropriate safety clothing, goggles, gloves, masks etc., If the work operation appears to be excessively noisy, wear ear-defenders. If you wear your hair in a long style, wearing a cap, safety helmet, hairnet, even a sweatband, will minimise the possibility of your hair being caught up in the rotating parts of the machine, likewise, consideration should be given to the removal of rings and wristwatches, if these are liable to be a 'snag' hazard. Consideration should also be given to non-slip footwear, etc.

Do not work with cutting or boring tools of any description if you are tired, your attention is wandering or you are being subjected to distraction. A deep cut, a lost fingertip or worse; is not worth it!

Do not use this machine within the designated safety areas of flammable liquid stores or in areas where there may be volatile gases. There are very expensive, very specialised machines for working in these areas, **THIS IS NOT ONE OF THEM.**

Check that cutters, drills, blades etc., are the correct type and size, are undamaged and are kept clean and sharp, this will maintain their operating performance and lessen the loading on the machine.

Above all, **OBSERVE....** make sure you know what is happening around you, and **USE YOUR COMMON SENSE.**

Ideally, your mill should be installed close to a correctly rated power supply, in a warm dry environment, well ventilated and illuminated by bright clear natural light, with adequate access all around the machine, and sufficient adjacent storage space for your tools, accessories and material.

The Micro-Mill is best mounted on a rigid bed; this is to ensure stability of the machine and to attenuate any vibration that is generated when the machine is running.

The bed should be flat and set level in both planes, and at a height that enables comfortable operation of the machine. It is not necessary to anchor the bed through to the floor, but it must be stable enough to remain immovable during any normal forceful operations (especially tightening) carried out whilst operating your mill.

If you are preparing your own bed for the machine, it should be at least 400mm long by 250mm wide; (to cover the footprint of the base (354 x 216)), you will need to drill 4 No. 8.5mm holes to allow for bolt fixing. Set out the centres of the holes in the following matrix: 294mm x 186mm

Bolt the mill to the bed using M8 nuts, bolts and washers.

Locate and identify the 3 rod handles from the packing box. Fit these to the 3 wheel handles, (Work table control, traverse feed control, head raise and lower control.)



Please read the section entitled Identification and Parts description so that you may more easily identify the parts to which reference is made in the text.

Testing

When the lathe is mounted to your satisfaction, proceed as follows:-

- a)** Close the chuck jaws
- b)** Check the millhead is 'locked' in position on the column.
- c)** Check that all loose items are removed from the worktable.
- d)** Set the worktable approximately mid-positioned under the chuck jaws.
- e)** Check the speed control is switched OFF (fully anti-clockwise).
- f)** Check the Forward/Off/Reverse Switch is in the Off position
- g)** Select L (Low) on the gear box .
- h)** Connect the machine to the mains supply and switch power on.
- i)** Turn the Speed Control Switch On (Clicks On) and Select Forward on the Forward/Off/Reverse switch.
- J)** Check the Amber LED (Fault Light) is illuminated and the green light is illuminated.
- k)** Switch the Speed Control Switch Off (Clicks Off) and the Amber Led is now Off and the Green light stays on.

Initial Assembly and Testing

- l)** Turn the Forward/Off/Reverse switch to Off position (Clicks Off) all lights are now off.
- m)** Select Forward on the Forward/Off/Reverse switch.
- n)** Turn the Speed Control Switch On and advance until the Chuck starts to rotate.
- o)** Turn the Forward/Off/Reverse switch to Off position, check that the machine stops, turn the Forward/Off/Reverse switch to Forward, check that the Green light comes on and the Amber LED comes on and the machine does not start. Turn all switches off (All lights are off).
- p)** Turn Forward/Off/Reverse switch to Forward.
- q)** Turn the Speed Control Switch On (Clicks On), advance until the chuck starts to rotate.
- r)** Over a period of approximately 5 minutes advance the speed in stages to maximum, run at maximum for at least 2 minutes, check that there is nothing untoward, (no excessive vibration, speed progression is smooth etc.). Stop the spindle and change the gear selector to H (High), carry out the previous check. Repeat the checks with the motor set in reverse.
- s)** If all the above checks are correct, stop the spindle, (turn the speed control to zero and select Off on the direction selector switch. Ensure the fine feed control is disengaged, using the 'coarse' feed lever handle, exercise the quill up and down, check the movement is smooth and precise.
- t)** Select the fine feed function, (if necessary 'joggle' the feed hand to enable the gears to mesh). Raise and lower the quill using the fine feed control. Check the movement is smooth and precise, there are no hard spots and the feed doesn't bind up.
- u)** Exercise the worktable and the traverse feed, check you have full travel and that the movements are smooth and 'tight'. Reposition the worktable approximately mid-way and lock in position, check that the table will not move when 'reasonable' force is applied to either the traverse or longitudinal feed handles. (Note. Reasonable force is meant to indicate that force you would apply to proceed with the next action, and that the resistance to the action would make you investigate as to why the action was blocked. It is not meant as a challenge for you to bunch muscles and heave).
- v)** Ensure the head lock clamp is loosened and exercise the rise and fall, driving the head up and down the tool post. Check the movement is smooth and tight. Leave the head fairly well down the tool post for the next check.
- w)** Loosen the tilt clamp bolts, and tilt the tool post to the left and right, clamp the tool post in an arbitrary position and tighten the clamp bolts. Check that the tool post remains locked in place. (WARNING. If the tool post is tilted too far out of the vertical the mill can become unstable if it is not fastened to a solid workbench. Exercise care.) Return the tool post to the vertical.
- x)** If all the above checks are correct, your mill is now ready for use. Enjoy.

Specification

Code	505098
Model	SIEG SX1
Power	150W
Spindle Speed	Variable 100-1,000 & 100-2,000rpm
Spindle Taper	2MT
Nose of Spindle to Table (MAX)	255mm
Head Tilt	45° 0° 45° R
Longitudinal Table Movement	180mm
Lateral Table Movement	90mm
Table Size	240 x 145mm
Overall L x W x H	430 x 355 x 715mm
Weight	32kg

Definitions

'X' Axis.	This is the axis described by the work table as it is moved side to side. Normally, movement that moves the tool to the right in the workpiece is referred to as +ve 'X', and movement that moves the tool to the left in the workpiece is referred to as -ve 'X'. Where the initial position of the tooling and the worktable is designated 0,0. (Horizontal plane only).
'Y' Axis.	This is the axis described by the work table as it is moved from front to back.(Traverse) Normally movement that moves the tool to the front in the workpiece is referred to as -ve 'Y', and movement that moves the tool to the rear in the workpiece is referred to as +ve 'Y'. Where the initial position of the tooling and the worktable is designated 0,0.(Horizontal plane only).
'Z' Axis	This is the axis described by the worktable in the vertical plane. (Not possible with this machine). However, to establish a point in space, the co-ordinates can be transferred to the 'tip' of the tooling, whereby, if we assume that the tool and the worktable in their initial positions, where designated 0,0,0, (Horizontal and vertical planes) any point above the tool tip is referred to as +ve 'Z', and any point below the tool tip is referred to as -ve 'Z'

Parts Identification and Description

Please take some time to identify the various parts of your machine so that you are familiar with the terminology we will use to enable you to set up and operate your Mill safely and correctly.

Base casting	This is the 'Stand' for the milling m/c. It is a square casting with a seating flange to the rear, which mounts the Tilt Housing for the Main Tool Post. There are 4 No. 8.75mm holes in the approximate corners of the base to enable it to be bolted to a bench or the stand. There is also a dovetail slide machined on the front top surface of the base, to mount the traverse slide of the worktable.
Main tool post	This is the column of the mill, it is an 65 x 50 bar with a dovetail slide machined on the front onto which the milling head is mounted, the lower part is the circular 'boss' for the tilt assembly. On the left side of the post a scale, graduated in mm's, is mounted to read against an adjustable pointer mounted on the head casting.
Rise and fall drive screw	The Rise and Fall drive screw is anchored in a machined housing at the top of the main tool post. It has a wheel and rod handle keyed to the shaft to enable the screw to be turned. It is fed through a threaded dog that is bolted to the head casting allowing the head to be moved up and down. Viewed from above the drive screw is turned clockwise to raise the head and anti-clockwise to lower it.
Tilt housing	The tilt housing is mounted to the base casting using 4 bolts. The tilt 'boss' of the main tool post is mated to the housing and clamped by a further 4 bolts. The main tool post can tilt 45(degrees) from the vertical either left or right. There is an adjustable pointer and a scale mounted on the housing to give an indication of the amount of tilt that has been applied.
Traverse slide	The traverse slide casting mounts onto the dovetail slide of the base casting. There is a gybe strip fitted to the right side dovetail to maintain the fit. In the front face of the slide is a machined housing which mounts and anchors the drive shaft for the traverse feed. Under the slide (on the base) is a threaded dog mounted in a fixed position, through which the traverse drive shaft is threaded so as to enable the slide to be driven back and forth. The top of the traverse slide has a female dovetail machined into it, perpendicular to the lower dovetail. This marries with the dovetail on the underside of the worktable. The front face of the dovetail is fitted with a gybe strip to maintain the fit. The top of the slide also has a fixed threaded dog mounted to it, through which the drive shaft of the worktable is threaded to allow the worktable to be driven from side to side. In between the grubscrews and locknuts of the gybe strip adjusters is an M4 caphead bolt that can be driven forward to clamp the gybe strips against the dovetails to enable the traverse and longitudinal movements to be locked in position.
Traverse slide control	The traverse slide is driven using the wheel and rod handle at the front of the machine. Behind the boss of the handle is a graduated ring (thimble) so that the movement of the slide can be measured. The thimble is held to the drive shaft by friction, and can be pre-positioned to a predetermined start or stop dimension.

Fig 1

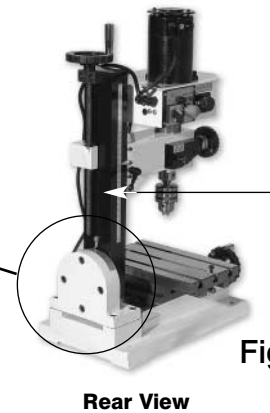
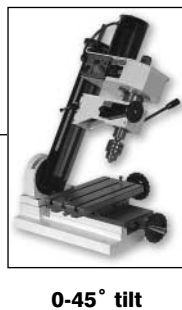
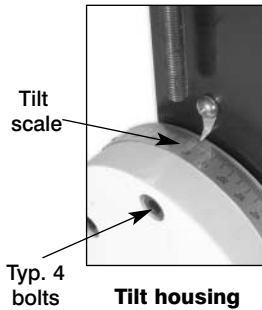
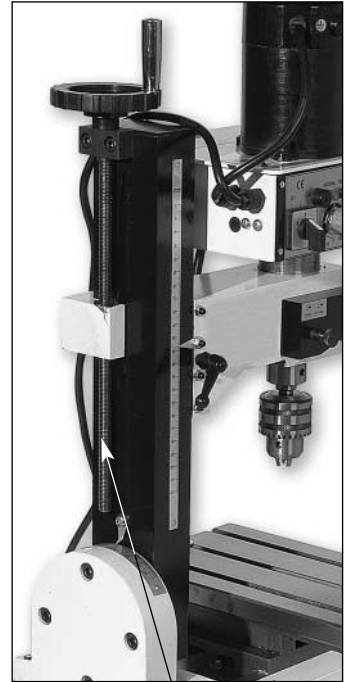
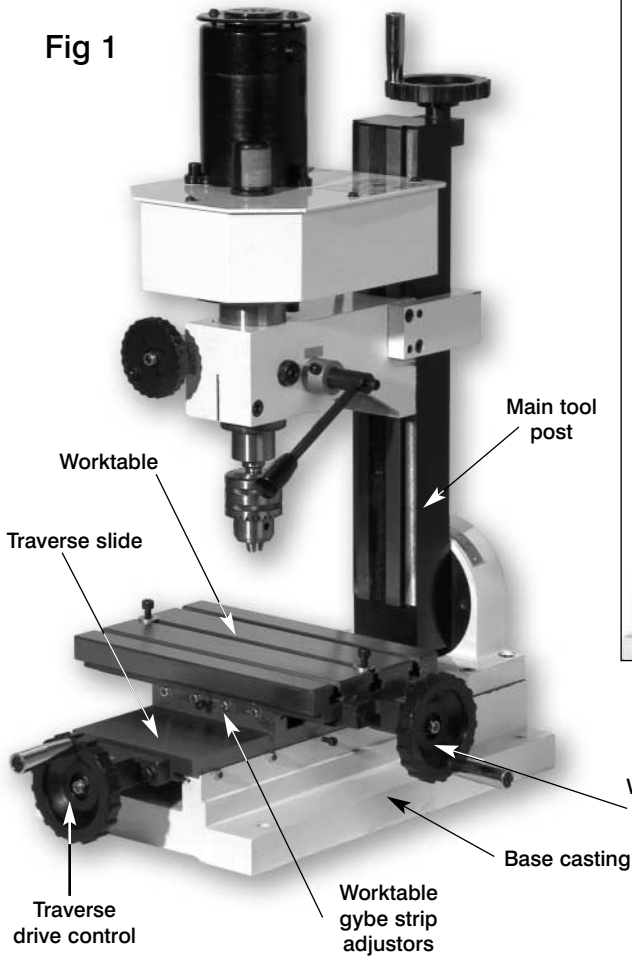
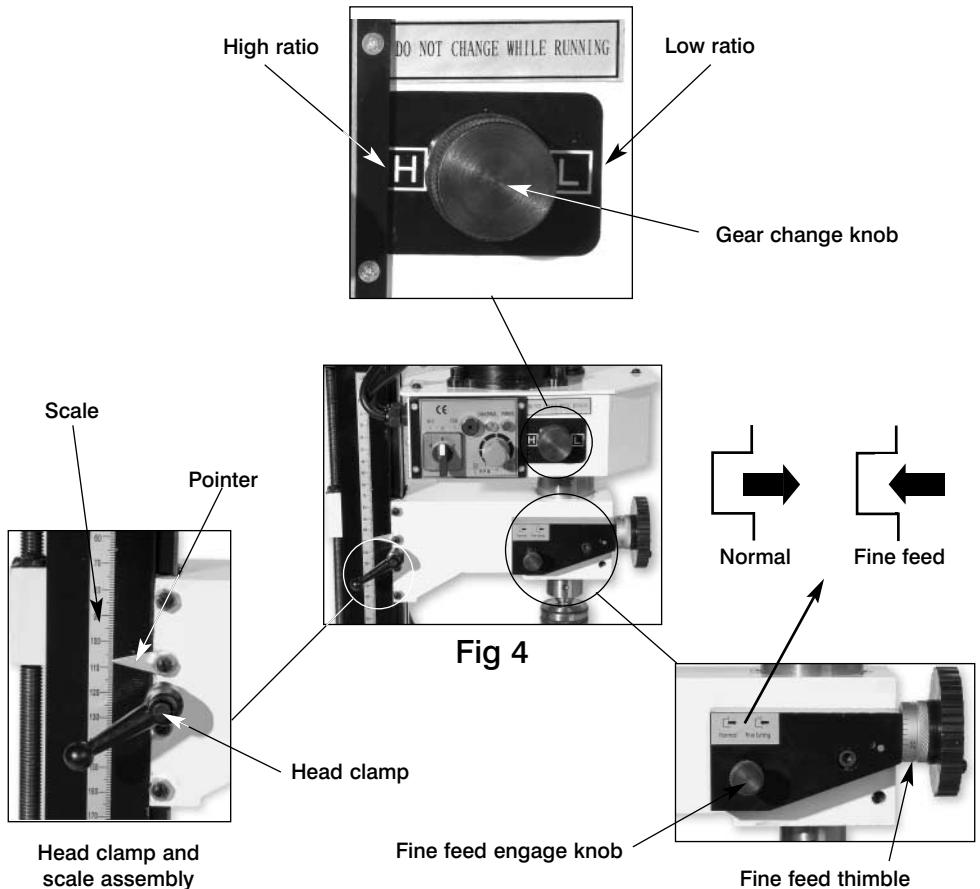
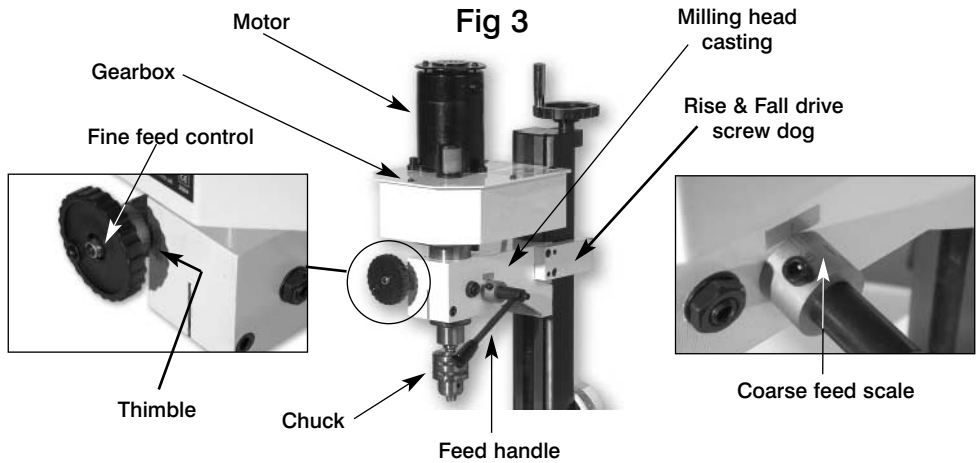


Fig 2

Parts Identification and Description

Worktable	The Worktable is a machined casting 240mm long by 145mm wide. There is a dovetail section machined in the underside to mate with the traverse slide. There are 3 x 8mm open ended 'T' slots machined in the table along its length, to facilitate the fixing of machine vices or clamps. The worktable is mounted onto the traverse slide. The right end face of the worktable has a housing machined in it to mount and anchor the drive shaft assembly.
Worktable drive control	The Worktable slide is driven using the wheel and rod handle at the end of the table. Behind the boss of the handle is a graduated ring (thimble) so that the movement of the worktable can be measured. The thimble is held to the drive shaft by friction, and can be pre-positioned to establish a predetermined start or stop dimension.
Milling head	This is the 'milling machine' and the descriptions of its various parts and components are detailed as follows:-
Milling head casting	The main casting to which all the components are attached. The head has a dovetail housing machined at the rear, which allows the casting to be fitted to the Main Tool Post. The left side of the dovetail slide is fitted with a gybe strip to maintain the fit.
Head clamp and scale	Similar to the traverse and longitudinal slides, centrally located between the gybe strip adjusters and locknuts is an M4 bristol handled bolt that clamps the gybe strip against the slide to effect a locking action for the rise and fall of the head. In the same location is an adjustable pointer which reads against the scale mounted on the main tool post, to enable the head to be moved against a reference point.
Rise and fall drive screw dog	An 'L' shaped casting that is threaded to accept the rise and fall drive screw, and is driven along the thread when the screw is turned. As it is bolted to the milling head, the head will therefore follow its movement as it is being driven.
Motor and gearbox	The motor and gearbox assembly are mounted above the main head casting at the top of the arbor sleeve. The motor drive is geared through to the spindle with an intermediate 2:1 gearbox.
Gear change knob	The gear change knob allows the selection of the high or low ratio of the gear train. The speed of the spindle is then governed by the speed control on the motor panel. (You may have to 'joggle' the chuck/tool to aid the meshing action).
Motor	A 220V d.c. motor rated at 150W.
Feed Handle	Lever handle that is used to drive the quill (and hence the chuck or the tool) up and down. The boss of the handle is fitted to the end of a 'splined' gear shaft. This 'splined' gear is, in turn, engaged in the rack cut into the quill body. There is a counter balance spring in the arbor and sleeve assembly, giving a more controlled 'feel' during drilling operations. It also retracts the quill when drilling is completed.

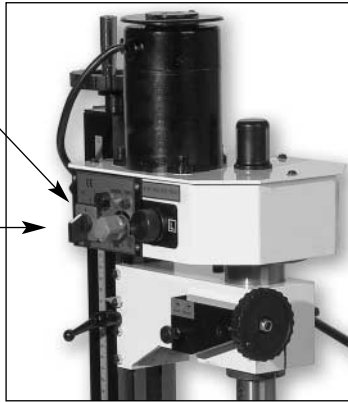


Parts Identification and Description

Fine feed assembly	<p>The fine feed assembly floats around the splined gear shaft that drives the quill up and down. When the action of the fine feed mechanism is required; pulling out 'engage' knob of the fine feed control meshes the gearing (you may have to 'joggle' the feed handle to aid the meshing action) between the splined shaft and the fine feed control shaft; this enables the spindle to be driven by the fine feed control wheel with greater precision. Behind the boss of the fine feed control wheel handle is a graduated ring (thimble) so that the movement of the quill can be measured. The thimble is held to the drive shaft by friction, and can be pre-positioned to establish a predetermined start or stop dimension.</p>
Motor control panel	<p><u>Power On LED</u> Green LED that indicates that power is available to the motor. i.e. mains is applied, fuse is intact and the Emergency stop switch is not activated.</p> <p><u>Fault LED (marked UNNORMAL)</u> Amber LED that indicates that there is a fault or an incorrect control sequence. i.e. the chuck guard interlock has been activated or the speed control is activated without forward or reverse direction being selected. The Motor will not run if the fault LED is illuminated. If the safety interlock is activated, the safety interlock will remain in force until the interlock is reset and the start sequence re-initiated.</p> <p><u>Fuse Cap</u> Access cap for the 20mm fuse cartridge (1 Amp 250V) Speed Control Knob Round raised ridge knob connected to the circuit that controls the spindle speed (100-1000 rpm or 100-2000 depending upon the gearbox selection).</p> <p><u>Forward /Off/Reverse Switch</u> Three position switch that controls the direction of rotation of the spindle. Forward indicates that the spindle is turning clockwise (looking down from above, reverse, the spindle is turning anticlockwise. The centre OFF position inhibits the spindle from turning in either direction, under motor drive.</p>
Quill hold pocket	<p>The size of the machine precludes any 'fancy' locking mechanism for the quill. There is a blind pocket on the spindle that accepts the tommy bar supplied in the tool kit, to enable the spindle to be held in position whilst the draw bar is loosened.</p>
Draw bar cover	<p>A moulded plastic cover that clips into the top of the Motor Gearbox assembly, to afford protection from the rotating top of the draw bar, when the quill is at the top of its travel.</p>
Draw bar (unseen)	<p>This is a metal rod, threaded M10 at one end and with an 8mm squared shank and flange machined on the other. It is fitted through the spindle mandrel to hold the fitted tool/tooling hard into the No2 MT taper of the spindle shaft.</p>

Fig 5

Motor control
panel



Fuse cap

Power on LED



Fault LED

Forward
/Off/Reverse
switch

Speed control
knob

Fig 6

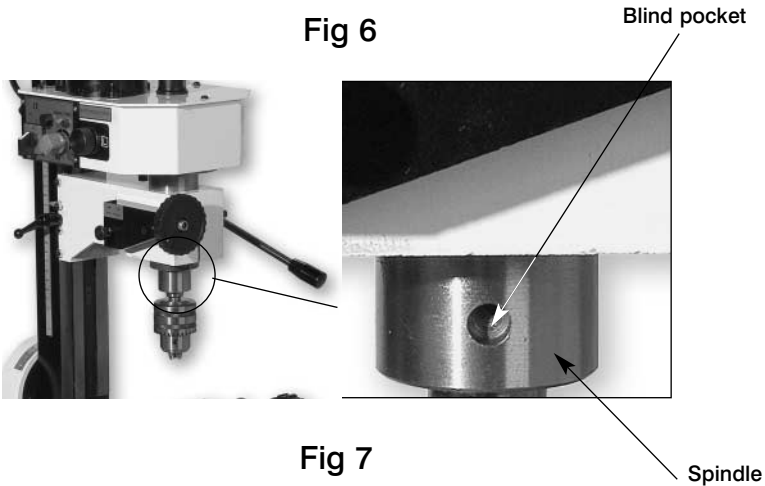
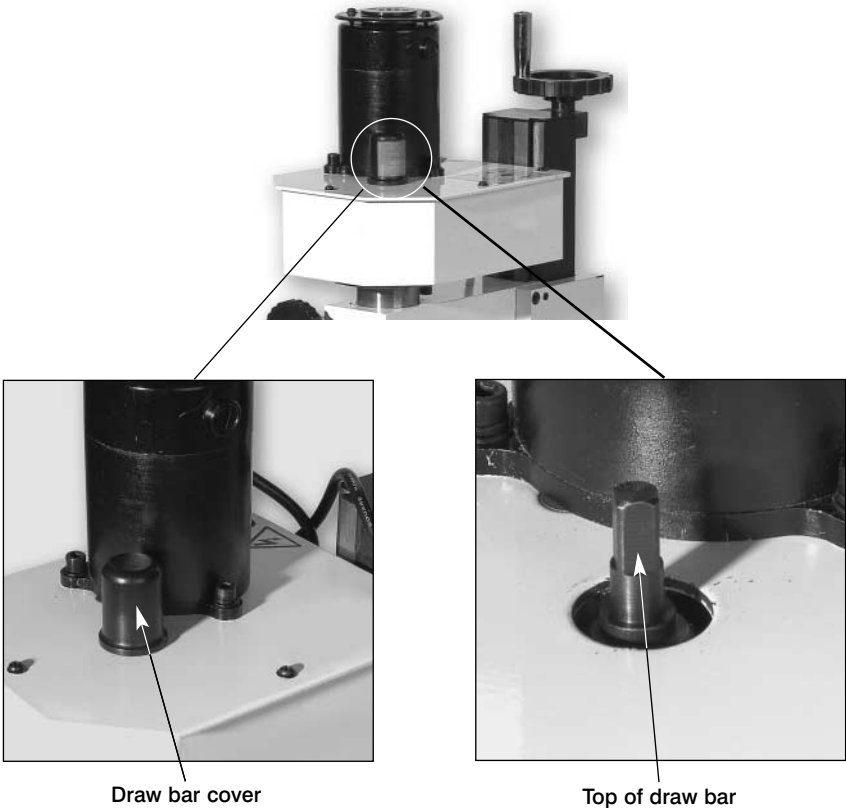


Fig 7





Warning Do not operate the mill in any function unless the head clamping lever is tightened.

Tool Changing

Note. The taper socket in the spindle mandrel does not have a 'drive flat' and all tooling, including the drill chuck is secured and driven by the taper lock and the draw bar.

Make sure the power is switched off or better still remove the power from the machine.

Locate and put to hand the 8mm A/F spanner and the tommy bar. Remove the Draw Bar Cover.

Hold the quill immovable by inserting the tommy bar into the quill hold pocket and loosen the draw bar. Unscrew two or three turns and then strike sharply with a hammer (preferably a copper face, to prevent the head of the draw bar peining over) this will break the lock between the tool and the spindle tapers .

Unscrew the draw bar from the tool. **Ensure the tool is supported**, i.e. will not fall onto the workpiece/table et al. When it is free put the tool carefully aside, remove the draw bar, check the thread, check the taper and the thread of the new tool are clean and undamaged, introduce the new tool into the taper, re-insert the draw bar and screw into the top of the tool.

Screw in the draw bar finger tight. Hold the quill immovable and tighten with the spanner. **DO NOT OVERTIGHTEN.** Replace the draw bar cover.

Remove all tooling and reconnect the machine. Ensure the tool path is clear, switch on, and check that the tool is correctly seated, is running true etc. If all is O.K, proceed.

General Safety Points

Milling (all cases)

Ensure the workpiece is securely clamped to the table.

Along the longitudinal Axis (X)

Ensure that the quill is locked in position before milling is commenced. Ensure the traverse slide lock is tightened.

Along the Traverse Axis (Y)

Ensure that the quill is locked in position before milling is commenced. Ensure the worktable lock is tightened.

Milling or Drilling Vertically (Z)

Ensure the traverse slide and the worktable locks are tightened.

Settings and adjustments

Feed scales

The three thimbles that are mounted on the feed shafts of the worktable, the traverse feed and the fine feed control should move freely with the motion of the handles and not slip. The thimbles can be turned, using more force, independently of the handle in order to set a predetermined start or finish point.

If the thimbles are 'slipping' i.e. not maintaining their place relative to the handle, whilst the handle is turning; the cause is almost inevitably dirt, swarf et al., between the pressure plate and the thimble. To rectify this, undo the nut and washer securing the handle to the shaft, remove the hand wheel, and then remove the keyed collar and thimble assembly. Take care that the key does not drop out of the shaft. Gradually separate the thimble from the keyed collar, by twisting and turning, until there is sufficient space to clean the mating surfaces.



Warning The friction drive between the collar and the thimble is effected by a wire spring (like part of a circlip) that is housed in a groove in the collar and rubs against the inside bore of the thimble. If the collar and the thimble are separated too far, the groove and the spring are exposed. The spring can fall out and if not lost, it is awkward to re-compress the spring so that the thimble will slide completely back onto the collar.

Once the mating surfaces are clean, mate the key and the keyway and fit the collar/thimble assembly to the shaft. Refit the washer and the securing nut, and tighten. Tighten until the handwheel, thimble and collar assembly are too tight to move. Undo the securing nut a quarter turn and check that the drive handle rotates freely and there is not excessive backward and forward play in the shaft. (The handle etc, forms one side of the drive screw anchor into the slide). Check the thimble remains synchronized with the handle whilst it is being turned.

Your Micro-Mill has been factory set and adjusted, however, during its life time you may find occasion whereby the mill needs adjusting to maintain its accuracy and optimum performance. These adjustments can be made as follows:-

Worktable and Traverse feed adjustment

The worktable and the traverse feed are both mounted over dovetail sections. In order to maintain the 'tightness' of the fit; between the sloping surface of the component and its mating surface a gybe strip has been inserted. (At the front of the worktable, and to the right hand side of the traverse feed). To adjust the gybe strips, use supplied allen key and spanner, release the lock nuts and screw the gybe strip grubscrews clockwise to compensate for any slackness or anti-clockwise to loosen the movement. Check, using the feed handles, that worktable and the traverse feed moves smoothly, If not, repeat the adjustments until the movement is smooth and tight over the whole of the travel.

Milling Head adjustment

The Milling Head is mounted over a dovetail section. In order to maintain the 'tightness' of the fit; between the sloping surface of the component and its mating surface, on the left hand side, a gybe strip has been inserted. To adjust the gybe strip, use the supplied allen key and spanner, release the lock nuts and screw the gybe strip grubscrews clockwise to compensate for any slackness or anti-clockwise to loosen the movement. Check, using the rise and fall drive feed handles, that the head moves smoothly, If not, repeat the adjustments until the movement is smooth and tight over the whole of the travel.

Your Mill is a precision tool. In order to maintain this precision and prolong its useful life, it is advised that you follow the recommended daily and periodic maintenance tables printed below.

Daily and Periodic Maintenance

Daily

Carry out a visual inspection. Repair any damage immediately. Minor damage to the beds should be taken out with an oilstone.

Move the worktable and the traverse feed back and forth by hand, check that the movement is smooth.

Spread a light film of oil over the worktable and the traverse slide bed.

Oil the end bearings of the drive shafts. Squirt oil onto the slide faces of mating components.

Exercise the components to ensure the oil is spread over both visible and obscure surfaces.

Daily after-use

1. Clean all swarf and chips away from the machine bed, slide surfaces, and the tool post.
2. Exercise the slides and ensure no swarf etc., is lodged in the drive shaft tunnels. If you have been using a coolant make sure the machine is thoroughly dried off.
3. Check the tool, ensure it is usable the next time, if not re-sharpen or replace the tool tip.
4. Lightly oil spray all the machine beds and surfaces.
5. Clean and lightly oil any tools you may have been using (drill chucks, spanners, chuck keys etc), and put them away.
6. Switch off the power supply. Disconnect the plug.
7. Cover the machine over with a dust cloth.

Weekly

1. Move the traverse slide fully back to give access to the tunnel, blow out to make sure all swarf is cleared away and heavily spray oil the tunnel, exercise the slide to work the oil into the drive thread and to lubricate the dog.
2. Spray oil the slide and the worktable bed, exercise the worktable to spread the oil to all surfaces, both hidden and visible.
3. Spray oil the underside of the machine onto the drive screws, exercise to ensure the oil is coating all components.
4. Clean and spray oil the rise and fall drive screw, exercise to ensure all parts are coated.
5. Check the movement of the worktable, the traverse slide and the head, check they are smooth and 'tight', if necessary reset the gybe strips until the movements are smooth and tight.
6. Wipe the quill outer sleeve clean and lightly oil, exercise the quill to spread the oil in the sleeve bushes.

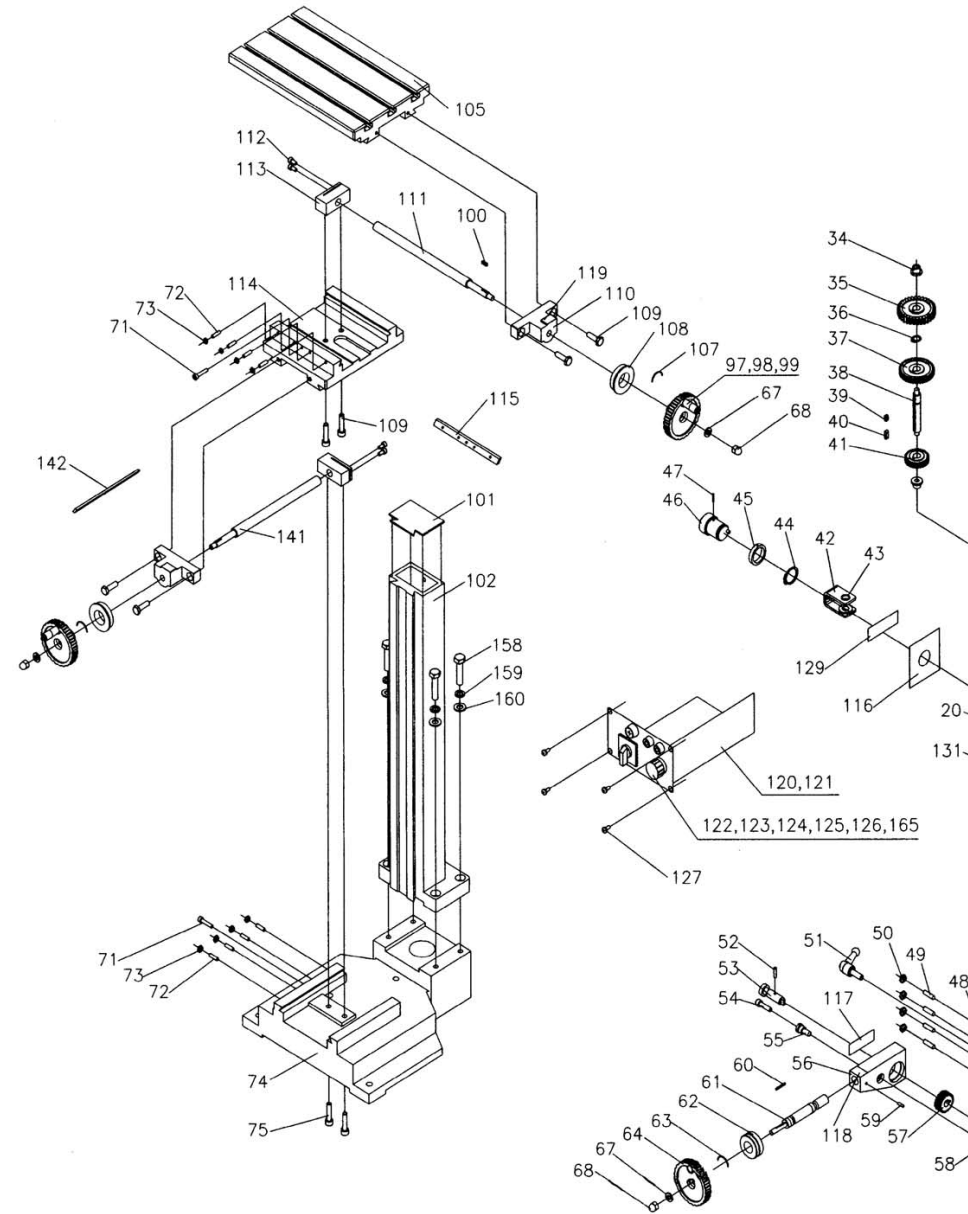
Monthly

- a) Give the motor a good 'blow through' to remove any dust, dirt etc,
- b) Check all the interlocks function correctly.

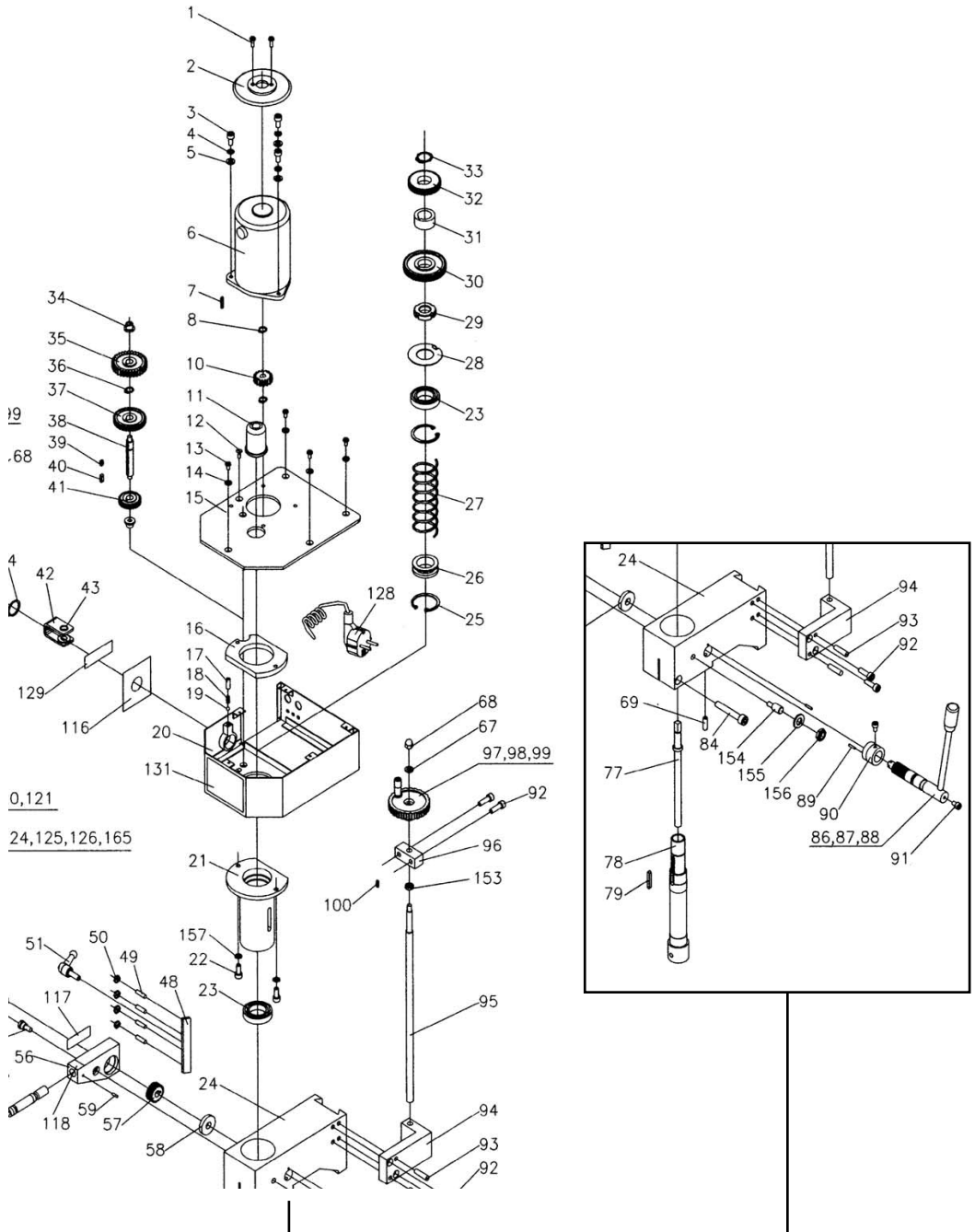
Accessories

There are numerous accessories for the machine listed in the Axminster catalogue. Some are illustrated at the rear of this manual.

Illustrated Parts Breakdown



Illustrated Parts Breakdown



Illustrated Parts List

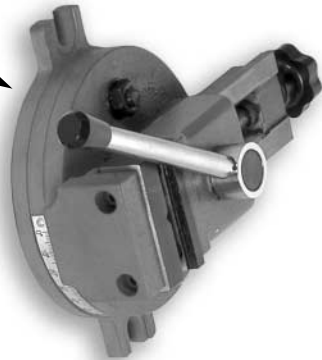
No.	Description	Q'ty	No.	Description	Q'ty
1	Screw M4*12	2	37	Change gear	1
2	Protect cover for motor	1	38	Shift shaft	1
3	Screw M6*12	3	39	Key 4×8	1
4	Spring washer 6	3	40	Key 4×12	1
5	Washer 6	3	41	Change gear	1
6	DC motor	1	42	Dial fork	1
7	Round key 3*16	1	43	Flange lining	2
8	Check ring for shaft 8	2	44	Check ring 20	1
10	Motor gear	1	45	Spacer	1
11	Safety cover	1	46	H/L change knob	1
12	Screw M4×6	1	47	Spring pin 2×12	1
13	Screw M4×8	4	48	Wedge	1
14	Washer 4	4	49	Screw M5×18	4
15	Up cover	1	50	Nut M5	4
16	Sleeve support plate	1	51	Handle	1
17	Screw M6×5	1	52	Pin A3×12	1
18	Compression spring	1	53	Joint shaft	1
19	Steel ball 5	1	54	Screw M5×18	1
20	Gear-box	1	55	Joint screw	1
21	Spindle sleeve	1	56	Worm base	1
22	Screw M6×14	2	57	Helical gear	1
23	Bearing 61905-2Z	2	58	Spacer	1
24	Spindle box	1	59	Pin A3×18	1
25	Check ring for hole 38	2	60	Key 2×18	1
26	Spring seat ring	1	61	Worm shaft	1
27	Compression spring	1	62	Dial	1
28	Round nut stop gasket	1	63	Damp spring	1
29	Round nut M24×1.5	1	64	Hand wheel	1
30	Spindle gear	1	67	Washer 6	4
31	Spacer	1	68	Top nut M6	4
32	Spindle gear	1	69	Screw M6×20	1
33	Check ring for shaft 20	1	71	Screw M4×20	2
34	Powder metallurgy bearing	2	72	Screw M4×18	8
35	Gear	1	73	Nut M4	8
36	Check ring for shaft 10	1	74	Base	1

No.	Description	Q'ty	No.	Description	Q'ty
75	Screw M6×20	2	120	Electricity box	1
77	Lock screw	1	121	PC Board	1
78	Spindle	1	122	Power indicate light	1
79	Key 4×28	1	123	Fuse box	1
84	Screw M8×50	1	124	Metachoresis switch	1
86	Gear shaft	1	125	Forward/reverse switch	1
87	Handle shaft	1	126	Electricity label	1
88	Long handle sleeve	1	127	Screw ST2.9×6.5	4
89	Spring pin 3×12	2	128	Power cord with plug	1
90	Mark show sleeve	1	129	Caution label	1
91	Screw M5×8	2	*131	Main label	1
92	Screw M6×20	4	*132	Drill chuck	1
93	Pin 6×26	2	*133	Inside Six horn Wrench S:3,6	1
94	Nut block	1	*134	Double end Wrench: 5.5*7, 8*10	1
95	Lifting screw	1	*135	Round nut wrench D=38-42	1
96	Screw support	1	*136	Oil can	1
97	Hand wheel	3	*137	Fuse	1
98	Handle bolt	3	*138	Taper shank	1
99	Handle sleeve	3	*139	Chuck key	1
100	Key 3×10	3	*140	T nut	4
101	Cover board	1	141	Cross screw	1
102	Fuselage	1	142	Cross wedge	1
107	Damp spring	2	153	Spacer	1
108	Dial	2	154	Adjust screw	1
109	Screw M6×16	4	155	Washer 10	1
110	Screw base	2	156	Nut M10	1
111	lengthways screw	2	157	Spring washer 6	2
112	Screw M4×8	4	158	Bolt M8*30	4
113	Screw nut	2	159	Spring washer 8	4
114	Saddle	1	160	Washer 8	4
115	Wedge	2	161	Block up plate	1
116	Change speed label	1	162	Rear splash guard	1
117	Joint label	1	163	Washer 4	2
118	0 position label	2	164	Screw M4*14	2
119	Dial label	1	165	Reset indicate light	1

PC Board Replacement Part No:

Part No: 600883

Vice 55mm
Code: (100034)



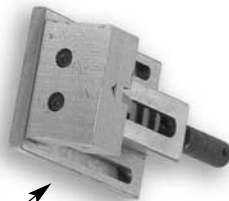
2MT 6mm collet
Code: (100023)



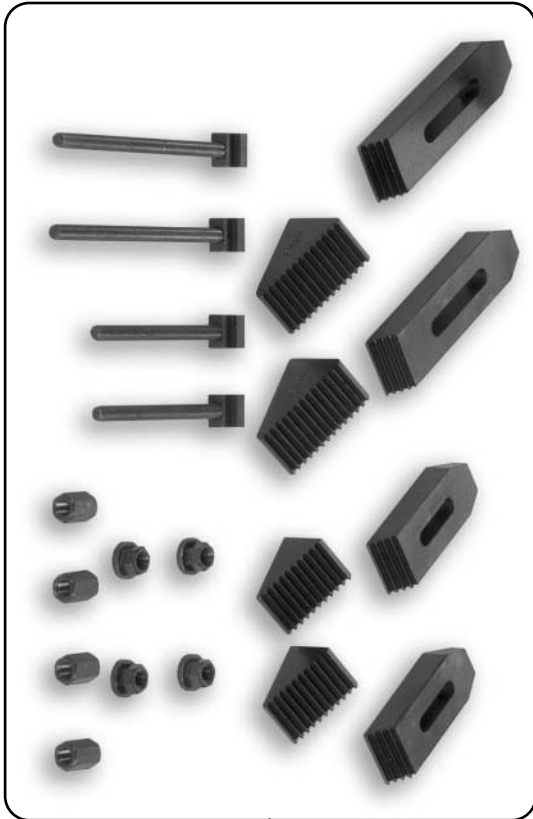
2MT 10mm collet
Code: (100024)

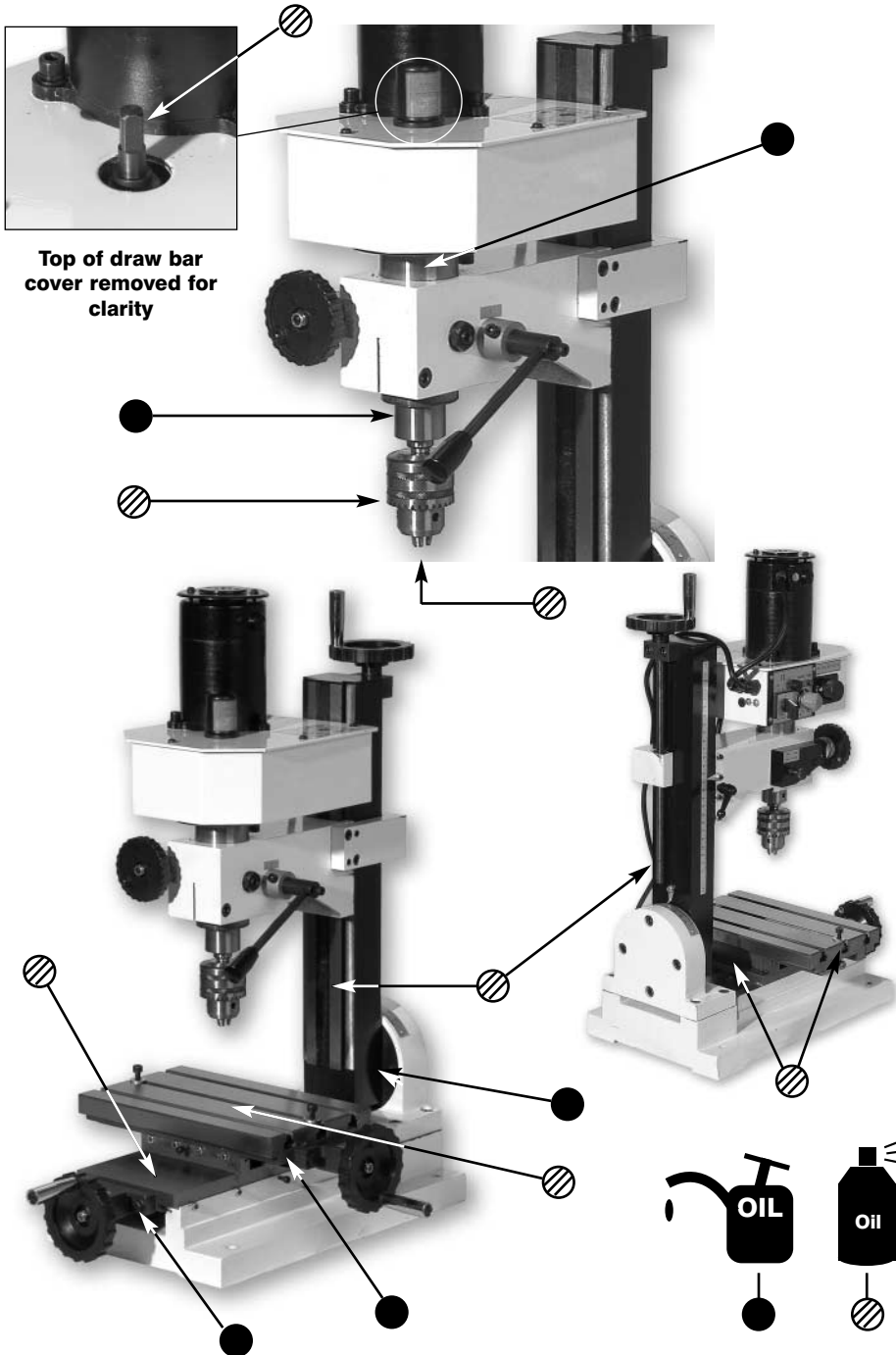


Quick vice 50mm
Code: (100022)



Clamping kit
Code: (100033)







Please dispose of packaging for the product in a responsible manner. It is suitable for recycling. Help to protect the environment, take the packaging to the local recycling centre and place into the appropriate recycling bin.

Only for EU countries



Do not dispose of electric tools together with household waste material. In observance of European Directive 2002/96/EC on waste electrical and electronic equipment and its implementation in accordance with national law, electric tools that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.